RigNet
always connected.

October 9, 2019

Ms. Marlene H. Dorch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: Notice of Ex Parte, Unlicensed Use of the 6 GHz Band,
ET Docket No. 18-295

Dear Ms. Dortch:

RigNet Satcom ("RigNet") submits this letter in response to the correspondence submitted on June 19, 2019 by a group of large technology companies ("LTC") consisting of Apple, Inc., Broadcom, Inc., Cisco Systems, Inc., Facebook, Inc., Google LLC, Hewlett Packard Enterprise, Intel Corporation, Marvell Semiconductor, Inc., Microsoft Corporation, Qualcomm Incorporated, and Ruckus Networks, a business segment of CommScope.

In response to the report submitted by RigNet, LTC mentions that RigNet Satcom's filing contains a number of "inaccuracies" and is asking the FCC to disregard RigNet's filing. However, rather than explaining these so called "inaccuracies," LTC mentions four assumptions in RigNet's study that LTC disagrees with. LTC does not disagree with the mathematics or methodology of the study itself. We now address each one of LTC's four points:

Automatic Frequency Coordination

LTC asserts that an Automatic Frequency Coordination (AFC) system would not permit high-powered operations within the vicinity of FS systems if the unlicensed systems would cause interference to the licensed FS systems. RigNet recognizes that this is the goal of any AFC system. However, at this point the idea of a fully reliable AFC system is only conceptual. No such AFC system has been designed or tested. Should the AFC system cover fixed as well as mobile operations? Should the AFC system be centralized or decentralized? Should the AFC system manage point-to-point as well as point-to-multipoint operations? Should be AFC system require device registrations? There are too many unknowns to simply make a blanket assertion that an AFC system would not allow high powered operations in the vicinity of FS systems.

As such, RigNet maintains that a Gulf of Mexico backhaul supporting critical infrastructure and 911 communications cannot be compromised by the uncertainties of theoretical AFC system.

Devices Operating without AFC

LTC asserts that low-power indoor (LPI) devices operating without AFC will not affect RigNet's FS network arguing primarily that losses from building materials would sufficiently attenuate signals from LPI devices. Contrary to this assertion, a study conducted by Comsearch, using actual data, suggests that LPI devices pose an interference potential into licensed microwave systems. Comsearch's study concludes that "there is no assurance that unlicensed devices operating indoors will not interfere with microwave services" and that "there are foreseeable circumstances in which unlicensed devices operating indoor could interfere with microwave services."[1] It is important to note that users of indoor devices can still place antennas outdoors, rendering moot the potential benefit of any building material attenuation.

Channel Bandwidth

LTC states that, in its calculations, RigNet used 20MHz operating channel bandwidths for the unlicensed devices and that this is uncommon. LTC further explains that it is expected that 80% of the 6 GHz operations will use 80 MHz channels. It is true that the wider channels provide greater throughput and spread the signal power over a wider bandwidth; and that this would place less unwanted energy into the operation of FS links. However, the reality is that *today,* 20 MHz channels are the norm. One need only utilize a testing device to scan the airwaves and 20 MHz channels will appear everywhere. Gulf of Mexico critical infrastructure cannot be compromised over some theoretical future when all users will use 80 MHz channels. In fact, the Comsearch study referenced above was done utilizing LPI devices with 80 MHz channels, and still the conclusion was that there is no assurance that unlicensed devices operating indoors will not interfere with microwave services.

Antenna Polarization

LTC states that RigNet's analysis does not include antenna polarization mismatch losses, and that, in its calculations, RigNet used horizontally polarized FS receiver antennas. LTC further asserts that some unlicensed devices do not use fixed polarization. The reason RigNet did not use antenna polarization mismatch losses is that even if unlicensed devices did not use fixed polarization, other polarizations would at least partially transmit in the same polarization of the FS receiver. LTC confirms this by stating that a median value of 3 dB should be included as an additional loss. The fact that there is a median indicates that at least 50% of the time, unlicensed devices would interfere with microwave systems. This is of no consolation to critical infrastructure applications in the Gulf of Mexico.

In sum, LTC's position is that RigNet's filing should be discarded because LTC's assumptions should have been used. However, we have shown above that each one of LTC's points is unfounded. Further, a challenge only of the assumptions is a confirmation that RigNet's calculations and methodology are correct.

---

[1] *In the Matter of Unlicensed User of the 6 GHz Band, ET Docket No. 18-295, Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Comments of Comsearch, pg. 8, (dated February 15, 2019)

The contents of this rebuttal to LTC were shared and discussed with members of the FCC's Public Safety and Homeland Security Bureau on September 25, 2019, including Michael Wilhelm and Kenneth Carlberg in person and Erika Olsen and Renee Roland via conference call.

Pursuant to Section 1.1206 of the Commission's rules, this letter is being filed electronically with your office.

Respectfully submitted

RIGNET, INC.

By: *James Arden Barnett, Jr.*
Raul Magallanes, Assoc. General Counsel
Brad Eastman, General Counsel
James Arden Barnett, Jr, RDML USN (Ret)
Senior Vice President, Government Service

cc:

Will Adams	Julius Knapp
Ira Keltz	Zenji Nakazawa
Erin McGrath	Umair Javed
William Davenport	Travis Litman
Aaron Goldberger	Randy Clarke
Michael Wilhelm	Kenneth Carlberg
Erika Olsen	Renee Roland